

Andrew L. Valesano

avalesan@umich.edu | August 2022

Education and Training

University of Michigan Medical School, Ann Arbor, MI August 2016 - Current
Medical Scientist Training Program (MD-PhD)
Ph.D. in Cellular and Molecular Biology
Anticipated Graduation: May 2023

Hope College, Holland, MI August 2011 - May 2015
Bachelor of Science in Biology, *summa cum laude*

Work Experience

University of Michigan, Department of Neurology, Ann Arbor, MI May 2015 – June 2016
Laboratory of Eva Feldman, M.D., Ph.D.
Research Technician
- Used molecular techniques to study the role of neuronal mitochondrial trafficking in diabetic neuropathy

Research Experience

University of Michigan, Department of Microbiology and Immunology August 2018 – September 2021
Laboratory of Adam Luring, M.D., Ph.D.
Ph.D. Student in Cellular and Molecular Biology, Postdoctoral Research Associate
Thesis: “Using Intrahost Genetic Diversity to Understand RNA Virus Evolution and Transmission”
- Employed next-generation sequencing of clinical samples to characterize within-patient genetic diversity of influenza viruses, live-attenuated polio vaccine, and SARS-CoV-2
- Implemented high-throughput laboratory and informatic methods for COVID-19 genomic surveillance
- Partnered with public health departments to address SARS-CoV-2 outbreaks with genomic epidemiology
- Used genomic analysis to investigate cases of COVID-19 in immunocompromised patients

University of Michigan, Department of Microbiology and Immunology June 2018 – August 2018
Laboratory of Evan Snitkin, Ph.D.
Graduate Student Rotation
- Analyzed whole genomes of *Clostridium difficile* to examine geographic transmission across the United States

University of Michigan, Department of Microbiology and Immunology July 2017 – Sept. 2017
Laboratory of Adam Luring, M.D., Ph.D.
Graduate Student Rotation

- Used molecular virology methods to assess effect of viral polymerase mutations on replication and fidelity

Hope College, Department of Biology, Holland, MI

January 2012 – May 2015

Laboratory of Aaron Best, Ph.D.

Undergraduate Researcher

- Transcriptome profiling to investigate transcription regulation in *Giardia lamblia* trophozoites

- Computational genomic-metabolic modeling of metabolic networks in *Shewanella* bacteria

Peer Reviewed Journal Articles

Lewis NM, Naioti EA, Self WH, Ginde AA, Douin DJ, Talbot HK, Casey JD, Mohr NM, Zepeski A, Gaglani M, Ghamande SA, McNeal TA, Shapiro NI, Gibbs KW, Files DC, Hager DN, Shehu A, Prekker ME, Erickson HL, Gong MN, Mohamed A, Henning DJ, Steingrub JS, Peltan ID, Brown SM, Martin ET, Hubel K, Hough CL, Busse LW, Ten Lohuis CC, Duggal A, Wilson JG, Gordon AJ, Qadir N, Chang SY, Mallow C, Rivas C, Babcock HM, Kwon JH, Exline MC, Halasa N, Chappell JD, Luring AS, Grijalva CG, Rice TW, Rhoads JP, Stubblefield WB, Baughman A, Womack KN, Lindsell CJ, Hart KW, Zhu Y, Schrag SJ, Kobayashi M, Verani JR, Patel MM, Tenforde MW, **IVY Network Collaborators**. Effectiveness of mRNA Vaccines Against COVID-19 Hospitalization by Age and Chronic Medical Conditions Burden Among Immunocompetent US Adults, March–August 2021. *The Journal of Infectious Diseases* 2022; 225(10):1694–1700.

<https://doi.org/10.1093/infdis/jiab619>.

Luring AS, Tenforde MW, Chappell JD, Gaglani M, Ginde AA, McNeal T, Ghamande S, Douin DJ, Talbot HK, Casey JD, Mohr NM, Zepeski A, Shapiro NI, Gibbs KW, Files DC, Hager DN, Shehu A, Prekker ME, Erickson HL, Exline MC, Gong MN, Mohamed A, Johnson NJ, Srinivasan V, Steingrub JS, Peltan ID, Brown SM, Martin ET, Monto AS, Khan A, Hough CL, Busse LW, ten Lohuis CC, Duggal A, Wilson JG, Gordon AJ, Qadir N, Chang SY, Mallow C, Rivas C, Babcock HM, Kwon JH, Halasa N, Grijalva CG, Rice TW, Stubblefield WB, Baughman A, Womack KN, Rhoads JP, Lindsell CJ, Hart KW, Zhu Y, Adams K, Schrag SJ, Olson SM, Kobayashi M, Verani JR, Patel MM, Self WH, **Influenza and Other Viruses in the Acutely Ill (IVY) Network**. Clinical severity of, and effectiveness of mRNA vaccines against, covid-19 from omicron, delta, and alpha SARS-CoV-2 variants in the United States: prospective observational study. *BMJ* 2022; 376:e069761, doi:10.1136/bmj-2021-069761.

Martin ET, Luring AS, Montgomery JP, **Valesano AL**, Eisenberg MC, Sheen D, Nord J, Ernst RD, Mortenson LY, Valdez R, Niknafs Y, Conway D, Rifat SF, Bagdasarian N, Lyon-Callo S, Collins J, Blankenship H, Soehnlén M, Marquez J. Containment of a multi-index B.1.1.7 outbreak on a university campus through a genomically-informed public health response. *medRxiv* 2022; doi:

<https://doi.org/10.1101/2022.01.04.22268758>.

Tenforde MW, Self WH, Adams K, Gaglani M, Ginde AA, McNeal T, Ghamande S, Douin DJ, Talbot HK, Casey JD, Mohr NM, Zepeski A, Shapiro NI, Gibbs KW, Files DC, Hager DN, Shehu A, Prekker ME,

Erickson HL, Exline MC, Gong MN, Mohamed A, Henning DJ, Steingrub JS, Peltan ID, Brown SM, Martin ET, Monto AS, Khan A, Hough CL, Busse LW, ten Lohuis CC, Duggal A, Wilson JG, Gordon AJ, Qadir N, Chang SY, Mallow C, Rivas C, Babcock HM, Kwon JH, Halasa N, Chappell JD, Luring AS, Grijalva CG, Rice TW, Jones ID, Stubblefield WB, Baughman A, Womack KN, Rhoads JP, Lindsell CJ, Hart KW, Zhu Y, Olson SM, Kobayashi M, Verani JR, Patel MM, **Influenza and Other Viruses in the Acutely Ill (IVY) Network**. Association Between mRNA Vaccination and COVID-19 Hospitalization and Disease Severity. JAMA 2021; 326(20):2043–2054. doi:10.1001/jama.2021.19499.

WH Self, Tenforde MW, Rhoads JP, Gaglani M, Ginde AA, Douin DJ, Olson SM, Talbot HK, Casey JD, Mohr NM, Zepeski A, McNeal T, Ghamande S, Gibbs KW, Files DC, DN Hager, Shehu A, Prekker ME, Erickson HL, Gong MN, Mohamed A, Henning DJ, Steingrub JS, Peltan ID, Brown SM, Martin ET, Monto AS, Khan A, Hough CL, Busse LW, Ten Lohuis CC, Duggal A, Wilson JG, Gordon AJ, Qadir N, Chang SY, Mallow C, Rivas C, Babcock HM, Kwon JH, Exline MC, Halasa N, Chappell JD, Luring AS, Grijalva CG, Rice TW, Jones ID, Stubblefield WB, Baughman A, Womack KN, Lindsell CJ, Hart KW, Zhu Y, Mills L, Lester SN, Stumpf MM, Naioti EA, Kobayashi M, Verani JR, Thornburg NJ, Patel MM, **IVY Network**. Comparative Effectiveness of Moderna, Pfizer-BioNTech, and Janssen (Johnson & Johnson) Vaccines in Preventing COVID-19 Hospitalizations Among Adults Without Immunocompromising Conditions - United States, March-August 2021. MMWR Morb Mortal Wkly Rep. 2021 Sep 24; 70(38):1337-1343. doi: 10.15585/mmwr.mm7038e1.

Tenforde MW, Self WH, Naioti EA, Ginde AA, Douin DJ, Olson SM, Talbot HK, Casey JD, Mohr NM, Zepeski A, Gaglani M, McNeal T, Ghamande S, Shapiro NI, Gibbs KW, Files DC, Hager DN, Shehu A, Prekker ME, Erickson HL, Gong MN, Mohamed A, Henning DJ, Steingrub JS, Peltan ID, Brown SM, Martin ET, Monto AS, Khan A, Hough CL, Busse LW, Ten Lohuis CC, Duggal A, Wilson JG, Gordon AJ, Qadir N, Chang SY, Mallow C, Rivas C, Babcock HM, Kwon JH, Exline MC, Halasa N, Chappell JD, Luring AS, Grijalva CG, Rice TW, Jones ID, Stubblefield WB, Baughman A, Womack KN, Lindsell CJ, Hart KW, Zhu Y, Stephenson M, Schrag SJ, Kobayashi M, Verani JR, Patel MM, **IVY Network Investigators**. Sustained Effectiveness of Pfizer-BioNTech and Moderna Vaccines Against COVID-19 Associated Hospitalizations Among Adults - United States, March-July 2021. MMWR Morb Mortal Wkly Rep. 2021 Aug 27; 70(34):1156-1162. doi: 10.15585/mmwr.mm7034e2.

Valesano AL, Fitzsimmons WJ, Blair CN, Woods RJ, Gilbert J, Rudnik D, Mortenson L, Friedrich TC, O'Connor DH, Petrie JG, Martin ET, Luring AS. SARS-CoV-2 Genomic Surveillance Reveals Little Spread Between a Large University Campus and the Surrounding Community. Open Forum Infectious Diseases 2021; 8(11), ofab518.

Tenforde MW, Patel MM, Ginde AA, Douin DJ, Talbot HK, Casey JD, Mohr NM, Zepeski A, Gaglani M, McNeal T, Ghamande S, Shapiro NI, Gibbs KW, Files DC, Hager DN, Shehu A, Prekker ME, Erickson HL, Exline MC, Gong MN, Mohamed A, Henning DJ, Steingrub JS, Peltan ID, Brown SM, Martin ET, Monto AS, Khan A, Hough CL, Busse LW, ten Lohuis CC, Duggal A, Wilson JG, Gordon AJ, Qadir N, Chang SY, Mallow

C, Gershengorn HB, Babcock HM, Kwon JH, Halasa N, Chappell JD, Luring AS, Grijalva CG, Rice TW, Jones ID, Stubblefield WB, Baughman A, Womack KN, Lindsell CJ, Hart KW, Zhu Y, Olson SM, Stephenson M, Schrag SJ, Kobayashi M, Verani JR, Self WH, **Influenza and Other Viruses in the Acutely Ill (IVY) Network**. Effectiveness of Severe Acute Respiratory Syndrome Coronavirus 2 Messenger RNA Vaccines for Preventing Coronavirus Disease 2019 Hospitalizations in the United States. *Clinical Infectious Diseases* 2021; ciab687.

Pogue JM, Luring AS, Gandhi TN, Marshall VD, Eschenauer GA, Nagel JL, Baang JH, Zhou S, **Valesano AL**, Petty LA. Monoclonal antibodies for early treatment of COVID-19 in a world of evolving SARS-CoV-2 mutations and variants. *Open Forum Infectious Diseases* 2021, 8(7), ofab268.

Alpert T*, Brito AF*, Lasek-Nesselquist E*, Rothman J*, **Valesano AL***, MacKay MJ*, Petrone ME, Breban MI, Watkins AE, Vogels CBF, Kalinich CC, Dellicour S, Russell A, Kelly JP, Shudt M, Plitnick J, Schneider E, Fitzsimmons WJ, Khullar G, Metti J, Dudley JT, Nash M, Beaubier N, Wang J, Liu C, Hui P, Muyombwe A, Downing R, Razeq J, Bart SM, Grills A, Morrison SM, Murphy S, Neal C, Laszlo E, Rennert H, Cushing M, Westblade L, Velu P, Craney A, Cong L, Peaper DR, Landry ML, Cook PW, Fauver JR, Mason CE, Luring AS, St. George K, MacCannell DR, Grubaugh ND. Early introductions and transmission of SARS-CoV-2 variant B.1.1.7 in the United States. *Cell* 2021; 184, 2595–2604. *denotes equal contribution.

Dimcheff DE, **Valesano AL**, Rumfelt KE, Fitzsimmons WJ, Blair CN, Mirabelli C, Petrie JG, Martin ET, Bhambhani C, Tewari M, Luring AS. Severe Acute Respiratory Syndrome Coronavirus 2 Total and Subgenomic RNA Viral Load in Hospitalized Patients. *J. Infect. Dis.* 2021; jiab215.

Valesano AL, Blair C, Fitzsimmons WJ, Dimcheff DE, Rumfelt KE, Petrie JG, Martin ET, Luring AS. Temporal Dynamics of SARS-CoV-2 Mutation Accumulation Within and Across Infected Hosts. *PLoS Pathogens* 2021; 17(4):e1009499.

Kaul DR, **Valesano AL**, Petrie JG, Sagana R, Lyu D, Lin J, Stoneman E, Smith L, Lephart P, Luring AS. Donor to recipient transmission of SARS-CoV-2 by lung transplantation despite negative donor upper respiratory tract testing. *Am. J. Transplant* 2021; 00:1–5. *2022 AJT Outstanding Article Award*.

Valesano AL, Taniuchi M, Fitzsimmons WJ, Islam MO, Ahmed T, Zaman K, Haque R, Wong W, Famulare M, Luring AS. The Early Evolution of Oral Poliovirus Vaccine Is Shaped by Strong Positive Selection and Tight Transmission Bottlenecks. *Cell Host and Microbe* 2021; 29(1):32-43.

Baang JH, Smith C, Mirabelli C, **Valesano AL**, Manthei DM, Bachman M, Wobus CE, Adams M, Washer L, Martin ET, Luring AS. Prolonged Severe Acute Respiratory Syndrome Coronavirus 2 Replication in an Immunocompromised Patient. *J. Infect. Dis.* 2021; 223(1):23-27.

Valesano AL, Fitzsimmons WJ, McCrone JT, Petrie JG, Monto AS, Martin ET, Luring AS. Influenza B viruses exhibit lower within-host diversity than influenza A viruses in human hosts. *J Virol.* 2020 94:e01710-19. doi: 10.1128/JVI.01710-19. *Editor's Spotlight Selection: Articles of Significant Interest.*

Rumora AE, Lentz SI, Hinder LM, Jackson SW, **Valesano A**, Levinson GE, Feldman EL. Dyslipidemia impairs mitochondrial trafficking and function in sensory neurons. *FASEB J.* 2018 Jan; 32(1):195-207. doi: 10.1096/fj.201700206R.

Research Presentations

Wan T, Luring AS, **Valesano AL**, Fitzsimmons WJ, Bendall EE, Kaye KS, Petrie JG. Investigating sources of hospital-acquired influenza infection in two seasons. Poster presentation at OPTIONS XI for the Control of Influenza. Belfast, Northern Ireland, September 26, 2022.

“What Can Genome Sequencing Tell Us About RNA Virus Evolution and Spread?”

Valesano AL.

Invited seminar at the Hope College Department of Biology, Holland, MI, 2021.

“SARS-CoV-2 Genomic Surveillance Reveals Little Spread Between a Large University Campus and the Surrounding Community”

Valesano AL, Fitzsimmons WJ, Blair CN, Woods RJ, Gilbert J, Rudnik D, Mortenson L, Petrie JG, Martin ET, Luring AS.

Poster presentation at IDWeek 2021 (virtual conference).

Poster presentation at Virus Genomics and Evolution 2021 (virtual conference).

“SARS-CoV-2 Replication and Evolution in an Immunocompromised Patient”

Valesano AL.

Oral presentation at the University of Michigan MSTP Annual Retreat 2021 (virtual conference).

“Limited intrahost diversity and convergent evolution within hosts complicate transmission inference for SARS-CoV-2”

Valesano AL, Rumfelt KE, Dimcheff DE, Blair CN, Fitzsimmons WJ, Petrie JG, Martin ET, Luring AS.

Oral presentation at the American Society for Virology General Meeting, 2021 (virtual conference).

Poster presentation at the CMB Spring Symposium 2021 (virtual conference).

“Genomic Epidemiology of SARS-CoV-2 at the University of Michigan in Fall 2020”

Valesano AL, William J. Fitzsimmons, Christopher N. Blair, Robert J. Woods, Joshua G. Petrie, Emily T. Martin, Adam S. Luring.

Oral presentation at the University of Michigan Internal Medicine Annual Research Symposium, 2021 (virtual conference)

“Evolutionary dynamics of type 2 oral polio vaccine in primary recipients and household contacts”

Valesano AL, Taniuchi M, Fitzsimmons WJ, Islam MO, Ahmed T, Zaman K, Haque R, Wong W, Famulare M, Luring AS.

Invited oral presentation at the Institute for Disease Modeling, Bellevue, WA, 2020

Invited oral presentation at the University of Virginia, Charlottesville, VA, 2019

“Within and Between-Host Evolution of Influenza B Virus in a Household Cohort”

Valesano AL, Fitzsimmons WJ, Petrie JG, Monto AS, Martin ET, and Luring AS.

Oral presentation at the American Society for Virology Annual Meeting, Minneapolis, MN, 2019

Poster at the CMB Spring Symposium, Ann Arbor, MI, 2019

“Transcriptome Profiling of the Life Cycle of *Giardia lamblia* Using RNA-seq”

Valesano AL and Best AA.

Poster at the American Society for Microbiology General Meeting, Boston, MA, 2014

Poster at the Beckman Symposium, Irvine, CA, 2014

“Comparative Analysis of 26 Genome-Scale Metabolic Models of the Genus *Shewanella*”

Valesano AL, Eguiluz ME, and Best AA.

Poster at the American Society for Microbiology General Meeting, Denver, CO, 2013

Poster at the Midstates Consortium for Math and Science, St. Louis, MO 2013

Activities and Service

MedConnect Program Volunteer

June 2020 – August 2020

University of Michigan Medical School, Ann Arbor, MI

- Provided social support for inpatients at the University Hospital via phone/video call during isolation

Student Advising Committee, Program in Cellular and Molecular Biology

August 2019 – May 2021

University of Michigan Medical School, Ann Arbor, MI

- Provided regular peer advising for first-year graduate students preparing for comprehensive qualifying exams

High School Student Mentor, Doctors of Tomorrow Program

August 2016 – May 2017

University of Michigan Medical School, Ann Arbor, MI

- Mentored high school students from underrepresented communities in Detroit interested in health professions

Awards and Accomplishments

American Society for Virology Student Registration Award

2021

Cellular and Molecular Biology Graduate Fellowship, University of Michigan

2019

Barry M. Goldwater Scholar	2014
American Society for Microbiology Undergraduate Research Fellowship	2013
American Society for Microbiology Student Travel Grant	2013

Teaching Experience

Graduate Student Instructor	January 2020 – April 2020
University of Michigan, Department of Microbiology and Immunology	
MICROBIOL 405: Introduction to Microbiology	